

RTIP ID# (*required*): 2H01143

TCWG Consideration Date: February 23, 2010

Project Description (*clearly describe project*)

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans), the cities of San Clemente, Dana Point, and San Juan Capistrano, is proposing to widen Interstate 5 (I-5) between Avenida Pico and San Juan Creek Road; refer to Exhibits 1a and 1b (Site Plan). The project objectives are to provide continuity of the I-5 mainline high-occupancy vehicle (HOV) network within the project limits; maximize overall performance within the project limits by minimizing weaving conflicts at the termini of the HOV lanes; maintaining travel speeds for HOV lane users; provide intermittent auxiliary lanes, where needed, to relieve congestion at diverge and merge locations; minimize right-of-way acquisition; relieve congestion within interchange areas, on- and off-ramps, and local intersections; and reduce congestion on I-5 within the project limits. The project limits on I-5 extend from 0.4 mile south of the Avenida Pico Undercrossing (UC) (PM 3.0) to 0.1 mile south of the San Juan Creek Road UC (PM 8.7). The proposed project would add one HOV lane in each direction on I-5 throughout the project limits, reestablish existing auxiliary lanes and construct new auxiliary lanes, and improve several existing on- and off-ramps.

Four alternatives, including the No Build Alternative, will be analyzed as part of the Draft Initial Study/Environmental Assessment (IS/EA). The project alternatives are described below.

Alternative 1 (No Build)

The no-build alternative proposes no improvements to I-5, maintaining the existing four general purpose lanes throughout the project limits in the northbound and southbound directions. All freeway facilities would remain as-is with the exception of proposed projects that are under development or currently in construction.

Alternative 2

Auxiliary Lanes. Alternative 2 proposes to remove the existing I-5 paved shoulders and construct a new travel way and new shoulder pavement to the outside of the northbound and southbound lanes to accommodate HOV lanes. This alternative proposes full standard widths, including a 10-foot inside shoulder, 12-foot HOV lane, four-foot buffer, four 12-foot general purpose lanes, and a 10-foot outside shoulder throughout the majority of the project limits. Additionally, existing auxiliary lanes through the project limits are proposed to be reestablished, and new auxiliary lanes would be constructed at the following locations:

- To Avenida Vista Hermosa southbound off-ramp;
- From Avenida Vista Hermosa northbound on-ramp; and
- From Camino de Estrella southbound on-ramp.

Avenida Pico Interchange Improvements. In addition to providing an HOV lane through the I-5/Avenida Pico interchange, the interchange configuration would also be improved. There are two options under consideration for reconfiguration of the interchange, both of which require replacement of the Avenida Pico Overcrossing structure.

- **Design Option A – Modified Tight Diamond Interchange.** Under this option, the on- and off-ramps at Avenida Pico would be realigned and the northbound on-ramp would be widened to three lanes. The overall configuration of the interchange would be similar to the existing configuration. Additionally, Avenida Pico would be improved under the structure to provide dual left-turn lanes to both the northbound and southbound on-ramps. This alternative would incorporate an interconnect line to optimize signal timing and operations for the closely spaced intersections at the interchange. The geometry of Avenida Pico would also be improved on the east side of I-5 to remove the existing reversing curves. Bicycle lanes and standard outside shoulders would be provided throughout the majority of the interchange in both the eastbound and westbound directions. A sidewalk would be provided through the interchange in the eastbound direction. In the westbound direction, space would be provided to accommodate future construction of a sidewalk through the interchange.

- Design Option B – Northbound Loop On-Ramp/Realigned Northbound Off-Ramp. Under this option, a northbound loop on-ramp would be added to allow for the removal of the existing left-turn lane for traffic heading eastbound on Avenida Pico to access northbound I-5. (The existing directional on-ramp would remain in place for traffic heading westbound to access northbound I-5.) Additionally, the northbound off-ramp would be reconfigured around the loop resulting in a partial cloverleaf configuration. The southbound ramps would be realigned and the geometry of Avenida Pico would be improved as proposed in Design Option A. Dual left-turn lanes would be provided under the structure to the southbound on-ramp. Bicycle lanes and standard outside shoulders would be provided throughout the majority of the interchange in both the eastbound and westbound directions. A sidewalk would be provided through the interchange in the eastbound direction. In the westbound direction, space would be provided to accommodate future construction of a sidewalk through the interchange.

Ramps. All ramps within the project limits would be modified in order to accommodate the HOV lanes, which include improvements ranging from restriping to complete reconstruction. Specifically, ramp modifications under this alternative include:

Avenida Pico

- Modify ramps as described in Design Options A and B above.

Avenida Vista Hermosa

- Restripe the northbound and southbound loop on-ramps; and
- Restripe the northbound on- and off-ramps and southbound off-ramp.

Camino de Estrella

- Realign, reconstruct, and widen the southbound off-ramp to a two-lane ramp;
- Realign and reconstruct the northbound and southbound on-ramps and northbound loop on-ramp; and
- Realign the northbound off-ramp.

Camino Las Ramblas/Pacific Coast Highway (PCH)

- Realign, reconstruct, and widen the southbound on-ramp to a two-lane ramp;
- Realign and reconstruct the southbound loop on-ramp;
- Realign the southbound off-ramp and northbound on- and off-ramps; and
- Realign the northbound I-5 connector.

Camino Capistrano (Stonehill Drive)

- Realign and reconstruct the northbound on-ramp with a lower profile under the bridge to provide a standard vertical clearance.

Structures

Via California

- Reduced shoulder widths are proposed under the Via California structure in order to avoid replacement of the existing Via California Overcrossing (Bridge No. 55-225). The inside shoulder would be reduced to approximately four feet at the minimum location and the HOV buffer would be eliminated in the northbound direction.

Avenida Pico

- This alternative also proposes to replace the Avenida Pico UC structure (Bridge No. 55-205) to accommodate the HOV lane in each direction through the interchange. In order to achieve minimum vertical clearance for this structure, the I-5 mainline profile would be raised through the interchange area. Additionally, to ensure that all existing mainline lanes are open through construction, the I-5 centerline would be realigned westerly approximately 20 feet through the interchange.

Avenida Vaquero UC (Bridge No. 55-223)

- Structure widening.

Northbound I-5 to northbound PCH Connector (Bridge No. 55-226)

- Structure widening.

Route 5/Camino Las Ramblas UC (Bridge No. 55-510)

- Structure widening.

Camino Capistrano UC (Stonehill Drive) (Bridge No. 55-227L and 55-227R)

- Structure widening.

Other Improvements. Alternative 2 proposes to improve the existing compound curve between 0.3 mile south of Stonehill Drive and Pacific Coast Highway (PCH). This alternative would provide a wide inside shoulder (26 feet at the maximum width) throughout the southern portion of the curve along with increasing the radius from 2,000 to 2,200 feet to accommodate full standard stopping sight distance in the southbound direction. For the northern portion of the curve, the existing radius would be increased from 3,200 to 3,300 feet, with a 16-foot shoulder, in order to achieve a standard stopping sight distance through this portion of the compound curve. To accommodate the improvements to this compound curve, the median would be reconstructed.

Alternative 3

Alternative 3 is very similar in nature to Alternative 2. The differences are noted below:

Auxiliary Lanes. New auxiliary lanes would be constructed at the same locations as noted in Alternative 2.

Avenida Pico Interchange Improvements. Design options for the Avenida Pico interchange reconfiguration would be the same as those noted under Alternative 2.

Ramps. Ramp modifications would be the same as those noted under Alternative 2 with the exception of the following:

Camino Capistrano (Stonehill Drive)

- Realign and reconstruct the northbound on-ramp with a lower profile under the bridge to provide standard vertical clearance.

Structures. Modifications and improvements to structures are the same as those noted under Alternative 2 with the exception that I-5 northbound Camino Capistrano UC (Stonehill Drive) (Bridge No. 55-227R) would not be widened.

Other Improvements. Unlike Alternative 2, in Alternative 3, for the northern portion of the compound curve, the existing radius would not be changed and a two-foot median shoulder would be provided, resulting in a non-standard stopping sight distance. To accommodate the improvements to this compound curve, the median would be reconstructed.

Alternative 4

Alternative 4 includes many of the improvements common to Alternatives 2 and 3, with a few modifications. Alternative 4 proposes no buffer instead of the four-foot buffer proposed in Alternatives 2 and 3. Under the no buffer scenario, the HOV lane would either accommodate limited access, with ingress/egress points for the interchanges, or continuous access throughout the project limits.

Auxiliary Lanes. New auxiliary lanes would be constructed at the same locations as noted in Alternatives 2 and 3.

Avenida Pico Interchange Improvements. Design options for the Avenida Pico interchange reconfiguration would be the same as those noted under Alternative 2.

PM Conformity Hot Spot Analysis – Project Summary for Interagency Consultation

<p><u>Ramps</u>: Ramp modifications would be the same as those noted under Alternative 3.</p> <p><u>Structures</u>: Modifications and improvements to structures are the same as those noted under Alternatives 2 and 3.</p> <p><u>Other Improvements</u>: Unlike Alternatives 2 and 3, for the northern portion of the compound curve, the existing radius would not be changed and a standard 10-foot median shoulder would be provided, which would minimize impacts but results in a non-standard stopping sight distance condition. To accommodate the improvements to this compound curve, the median would be reconstructed.</p>				
<p>Type of Project (use Table 1 on instruction sheet) Change to existing state highway.</p>				
<p>County: Orange</p>	<p>Narrative Location/Route & Postmiles: Interstate 5, PM 3.0/8.7</p> <p>Caltrans Projects – EA# 0F9600</p>			
<p>Lead Agency: California Department of Transportation</p>				
<p>Contact Person Reza Aurasteh, Ph.D., Chief</p>	<p>Phone# 949.724.2738</p>	<p>Fax# 949-724-2591</p>	<p>Email reza_aurasteh@dot.ca.gov</p>	
<p>Hot Spot Pollutant of Concern (check one or both) PM2.5 X PM10 X</p>				
<p>Federal Action for which Project-Level PM Conformity is Needed (check appropriate box)</p>				
<p>Categorical Exclusion (NEPA)</p>	<p>X</p>	<p>EA or Draft EIS</p>	<p>FONSI or Final EIS</p>	<p>PS&E or Construction</p>
<p>Other</p>				
<p>Scheduled Date of Federal Action:</p>				
<p>NEPA Delegation – Project Type (check appropriate box)</p>				
<p>Exempt</p>	<p>Section 6004 –Categorical Exemption</p>		<p>X Section 6005 – Non-Categorical Exemption</p>	
<p>Current Programming Dates (as appropriate)</p>				
	<p>PE/Environmental</p>	<p>ENG</p>	<p>ROW</p>	<p>CON</p>
<p>Start</p>	<p>2009</p>	<p>2011</p>	<p>2012</p>	<p>2015</p>
<p>End</p>	<p>2011</p>	<p>2014</p>	<p>2014</p>	<p>2019</p>
<p>Project Purpose and Need (Summary): (attach additional sheets as necessary)</p>				
<p>Purpose</p> <p>The purpose of the project is to improve existing and future traffic operations on I-5 from San Juan Creek Road to Avenida Pico while minimizing environmental and economic impacts. The following key issues represent general deficiencies of I-5 within the project limits, and the potential solutions/opportunities for improvements:</p> <ul style="list-style-type: none"> Achieve higher person carrying capacity within the corridor by increasing the vehicle occupancy rate; Reduce pollution and improve air quality along this corridor; Promote ride sharing and the use of HOVs such as carpools, vanpools, and bus services; Provide another lane option allowing for more consistent and predictable travel times for carpools, vanpools, buses, transit services, and emergency vehicles during peak periods; Relieve congestion due to the merge and diverge points for successive on- and off-ramps in both directions; Reduce delay due to the existing HOV termini location; Improve the capacity of the on- and off-ramps within the project limits, where needed; and Relieve congestion between successive ramps at several interchanges. 				

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The project objectives include the following:

- Provide continuity of the I-5 mainline HOV network within the project limits;
- Maximize overall performance within the project limits by minimizing weaving conflicts at the termini of the HOV lanes and maintaining travel speeds for HOV lane users;
- Provide intermittent auxiliary lanes, where needed, to relieve congestion at diverge and merge locations;
- Minimize right-of-way acquisition;
- Relieve local street congestion within interchange areas, on- and off-ramps, and local intersections; and
- Reduce congestion on I-5 within the project limits.
- Congestion due to weaving and merging between the successive ramps at several interchanges.

Need

Without this project, the efficiency of the regional HOV system would be reduced because HOV traffic would be required to merge into mixed-flow traffic lanes. Delay in completion of this project would contribute to traffic congestion on I-5 within the cities of San Clemente, Dana Point, and San Juan Capistrano. The proposed project is needed to address:

- A high level of traffic during the weekdays as well as the weekends/holidays through this section;
- Congestion due to the termination of the existing HOV lane in both directions;
- Delay due to weaving and merging of HOV at the current termini in both directions;
- Congestion at the on/off ramps due to high traffic demands at the ramps; and
- Congestion due to weaving and merging between the successive ramps at several interchanges.

Surrounding Land Use/Traffic Generators (*especially effect on diesel traffic*)

The proposed project site is within the cities of San Clemente, Dana Point, and San Juan Capistrano. Within the City of San Juan Capistrano, the project site is immediately surrounded by commercial uses. However, within the City of Dana Point and the City of San Clemente, the project site is surrounded by mostly residential uses. Five local arterial interchanges are within the project limits: Avenida Pico; Avenida Vista Hermosa; Camino de Estrella; Camino Las Ramblas/Pacific Coast Highway (PCH); and Camino Capistrano/San Juan Creek Road. Additionally, diesel truck traffic currently makes up four percent of the total traffic volumes within the project limits. The proposed project would extend HOV lanes and would not significantly change the number of trucks or the characteristics of trucks in the project area.

Opening Year: Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility

The project would involve removal of the existing I-5 paved shoulders and constructing a new travel way and new shoulder pavement to the outside of the northbound and southbound lanes to accommodate HOV lanes. Project construction would commence in 2015 and would be completed in 2019. The traffic analysis utilized existing 2009 traffic data and horizon year (2040) traffic data. As a result, existing conditions traffic data and operations have been presented in lieu of "Opening Year Conditions" traffic data. Table 1 (Existing Traffic Volumes), depicts the existing traffic volumes along each segment within the project limits. As shown in Table 1, existing traffic volumes range from 184,000 to 241,200 average daily trips (ADT), which includes truck volumes that range from 7,388 to 9,648 ADT.

Table 1
Existing Traffic Volumes

Location	Existing Conditions (2009)		
	ADT	% Trucks	# Trucks
I-5 Mainline			
South of Avenida Pico	184,700	4	7,388
South of Vista Hermosa	192,600	4	7,704
South of Camino de Los Mares	209,800	4	8,392
South of PCH/Camino Las Ramblas	228,500	4	9,140
South of Camino Capistrano/Stonehill	221,400	4	8,856
South of San Juan Creek	241,200	4	9,648
ADT = Average Daily Traffic; PCH = Pacific Coast Highway			
Source: Austin-Foust Associates, Inc., <i>I-5 HOV Lane Extension PA/ED Data</i> , December 2009.			

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The Caltrans performance standard for Freeway Mix-Flow (General Purpose) Lanes is a vehicle to capacity ratio (V/C) of less than or equal to 1.00. For freeway HOV Lanes, the standard is less than or equal to 1,600 vehicles per hour (vph) (1 lane), or 1,750 vph (2 lanes). Table 2 (Existing Conditions Level of Service) summarizes the existing V/C and corresponding Level of Service (LOS) along I-5 within the project area. As shown in Table 2, freeway segments along the I-5 mainline currently operate at an acceptable LOS.

Table 2
Existing Conditions Level of Service

Location	Existing	
	AM Peak Hour	PM Peak Hour
	V/C - LOS	V/C - LOS
I-5 Mainline - Northbound		
South of Avenida Pico	0.70 – C	0.69 – C
South of Vista Hermosa	0.74 – C	0.75 – D
South of Camino de Los Mares	0.83 – D	0.81 – D
South of PCH/Camino Las Ramblas	0.92 – E	0.88 – D
South of Camino Capistrano/Stonehill	0.75 – D	0.66 – C
South of San Juan Creek	0.92 – E	0.78 – D
I-5 Mainline - Southbound		
South of Avenida Pico	0.51 – B	0.62 – C
South of Vista Hermosa	0.69 – C	0.80 – D
South of Camino de Estrella	0.74 – C	0.89 – D
South of PCH/Camino Las Ramblas	0.73 – C	0.89 – D
South of Camino Capistrano/Stonehill	0.59 – B	0.81 – D
South of San Juan Creek	0.59 – B	0.81 – D
V/C = vehicle to capacity ratio; LOS = Level of Service; PCH = Pacific Coast Highway		
Source: Austin-Foust Associates, Inc., <i>I-5 HOV Lane Extension PA/ED Data</i> , December 2009.		

RTP Horizon Year / Design Year: Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility

Table 3 (Future Year 2040 Traffic Volumes) compares the horizon year “2040 No Build” and “2040 Build” traffic volumes along each freeway segment. As shown in Table 3, traffic volumes within the project limits exceed 125,000 vehicles daily. However, the percentage of trucks along this corridor is four percent, which is below the national average of eight percent¹. Based on the Caltrans document entitled *California Statewide PM Hot Spot Procedures* (dated October 19, 2007), a “significant increase” of diesel vehicles (trucks) is 5 percent when comparing Build with No Build alternatives. As depicted in Table 3, the greatest increase in truck volumes would be 3.25 percent. The average increase among all segments within the project limits would be 1.22 percent. The proposed continuation of HOV lanes would not affect truck travel along in the project area. As a result, the proposed project would not result in a significant increase of diesel vehicles. The increase in truck volumes between No Build and Build conditions can be attributed to the increase in overall traffic volumes. As total ADTs increase, the volume of trucks would increase proportionally.

Table 3
Future Year 2040 Traffic Volumes

Location	2040 No Build			2040 Build			# Trucks Percent Change
	ADT	% Trucks	# Trucks	ADT	% Trucks	# Trucks	
I-5 Mainline							
South of Avenida Pico	246,000	4	9,840	254,000	4	10,160	3.25%
South of Vista Hermosa	256,000	4	10,240	260,000	4	10,400	1.56%
South of Camino de Los Mares	267,000	4	10,680	270,000	4	10,800	1.12%
South of PCH/Camino Las Ramblas	293,000	4	11,720	296,000	4	11,840	1.02%
South of Camino Capistrano/Stonehill	279,000	4	11,160	280,000	4	11,200	0.36%
South of San Juan Creek	300,000	4	12,000	300,000	4	12,000	0.00%
ADT = Average Daily Traffic; PCH = Pacific Coast Highway							

¹ Federal Highway Administration, *Highway Statistics 2004*, March 2006.

PM Conformity Hot Spot Analysis – Project Summary for Interagency Consultation

Additionally, Table 4 (Horizon Year Level of Service) summarizes the existing and forecast future year 2040 peak hour volume to capacity analysis for the project limits on I-5. As shown in Table 4, implementation of the proposed project would alleviate several peak hour mainline deficiencies thereby reducing congestion.

Table 4
Horizon Year Level of Service

Location	2040 No Build		2040 Build	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
	V/C - LOS	V/C - LOS	V/C - LOS	V/C - LOS
I-5 Mainline - Northbound				
South of Avenida Pico	0.92 – E	0.84 – D	0.93 – E	0.85 – D
South of Vista Hermosa	0.97 – E	0.92 – E	0.87 – D	0.84 – D
South of Camino de Los Mares	1.11 – F	1.00 – E	0.99 – E	0.92 – E
South of PCH/Camino Las Ramblas	1.27 – F	1.04 – F	1.15 – F	0.95 – E
South of Camino Capistrano/Stonehill	1.07 – F	0.82 – D	1.06 – F	0.82 – D
South of San Juan Creek	1.24 – F	1.01 – F	1.23 – F	1.01 – F
I-5 Mainline - Southbound				
South of Avenida Pico	0.70 – C	0.84 – D	0.70 – C	0.84 – D
South of Vista Hermosa	0.93 – E	1.06 – F	0.85 – D	0.91 – E
South of Camino de Estrella	1.02 – F	1.21 – F	0.87 – D	0.99 – E
South of PCH/Camino Las Ramblas	0.99 – E	1.16 – F	0.87 – D	1.01 – F
South of Camino Capistrano/Stonehill	0.79 – D	1.00 – F	0.83 – D	1.08 – F
South of San Juan Creek	0.79 – D	1.00 – F	0.83 – D	1.08 – F
V/C = vehicle to capacity ratio; LOS = Level of Service; PCH = Pacific Coast Highway				
Source: Austin-Foust Associates, Inc., I-5 HOV Lane Extension PA/ED Data, December 2009.				

Opening Year: If facility is an interchange(s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT

See Above.

RTP Horizon Year / Design Year: If facility is an interchange (s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT

See Above.

Describe potential traffic redistribution effects of congestion relief (*impact on other facilities*)

The Regional Traffic Model produced by SCAG predicts ADT volumes based upon socio-economic data received from all of the counties and cities within their jurisdiction. The traffic volumes and peak hour demand are derived from the number of households, population, and number of jobs in the region. The ADT is derived by iterative model runs designed to determine the shortest route for travelers in time and distance. The proposed HOV lane extension would provide continuity of the I-5 mainline HOV network and maximize overall performance within the project limits. Extending the HOV lane would maintain travel speeds and minimize weaving conflicts that occur at the termini of the HOV lanes. The HOV Extension project would not divert to other routes, and the travel demand volume is not predicted to vary significantly between the build and no-build conditions.

Comments/Explanation/Details (attach additional sheets as necessary)

The EPA's March 2006 guidance document *Transportation Guidance for Qualitative Hot-spot Analysis in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas* references a two step criteria to identify "a significant volume of diesel truck traffic." The first criterion is facilities with greater than 125,000 ADT volumes. If the first criterion is met, the second criterion is that 8 percent or more of said traffic volumes (i.e., 10,000 vehicles or more) are diesel truck traffic volumes.

As discussed above, traffic volumes within the project limits exceed 125,000 vehicles daily. However, the percentage of trucks along this corridor is four percent, which is below the national average of eight percent. A "significant increase" of diesel vehicles (trucks) is considered to be 5 percent when comparing Build with No Build alternatives. **The average increase among all segments within the project limits would be 1.22 percent.** As a result, the proposed project would not result in a significant increase of diesel vehicles. As such, the project would not result in a substantial increase in the number of diesel vehicles within the project area (i.e., the project limits of I-5). According to the *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas*, this project is not a project of air quality concern under 40 CFR 93.123(b)(1).

The proposed project would not conflict with an applicable plan, policy, or regulation of an agency with jurisdiction over the project. The proposed project is also consistent with Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP) (RTP ID 2H01143) and Regional Transportation Improvement Program (RTIP) (RTIP ID ORA080912) and is intended to meet the traffic needs in the area based on local land use plans.